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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/990,658	11/16/2001	Hiroshi Miyajima	15082	2457

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EXAMINER
ALLEN, DENISE S

ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 01/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/990,658	MIYAJIMA ET AL.	
	Examiner	Art Unit	
	Denise S Allen	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-17 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-17 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 16 November 2001 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,4 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed May 10, 2002 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language, specifically the patent WO 00/50950. It has been placed in the application file, but the patent, WO 00/50950, referred to therein has not been considered.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "236" and "236a" have both been used in Figure 1 to designate bonding portions, reference characters "238" and "238a" have both been used in Figure 1 to designate attachment portions, reference characters "216" and "226" have both been used in Figure 2 to designate elastic members.

Figures 13 – 15 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: reference A (page 7 line 9) and reference B (page 7 line 11).

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: Figure 13 references XIV and XV.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 12 – 14 and 16 – 17 are objected to because of the following informalities:

The limitation "the main substrate" in claim 12 (lines 3 and 6) lacks antecedent basis because it is not previously recited in claims 1, 11, or 12. Suggested correction: replace the limitation "the main substrate" with "the base".

The limitation "the light beam" in claims 13 (lines 3 and 8) and 16 (lines 3 and 7 – 8) lacks antecedent basis because it is not previously recited in claims 1, 13, 15, or 16. Suggested correction: replace the limitation "the light beam" with "a light beam".

The limitation "neutral time" in claims 13 (lines 4 and 9) and 16 (lines 4 and 8 – 9) is unclear because the conditions constituting neutral time have not been defined in the claims or in the specification. For the purpose of examination, the limitation "neutral time" has been interpreted to mean a time when the movable plate is parallel to the base. Suggested correction: replace the limitation "neutral time" with "a time when the movable plate is parallel to the base".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in

> section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1 – 4 and 6 – 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Bernstein.

Regarding claim 1, Bernstein teaches an optical deflector (Figures 1A and 1C) comprising: a mirror structure (references 2, 3, and 5) having a first surface (reference 3B) and a second surface (reference 3A) which are in a front/back relation (column 6 lines 32 – 33), the mirror structure comprising a pair of supports (two sides of reference 2), a movable plate (reference 3) which is moved with respect to the supports (column 5 lines 23 – 25), and a pair of elastic members (reference 5) for connecting the movable plate and the supports, such that the movable plate is able to rock with respect to the supports about the pair of elastic members as a rocking axis (reference 50), the movable plate having a mirror surface on the second surface (column6 lines 4 – 16); a single plate base (reference 1) for holding the mirror structure, the base having an opening (inside reference 1) for exposing the mirror surface (Figure 3A), the supports of the mirror structure are fixed to the base (reference 4) with the second surfaces of the supports in contact therewith; and driving means (Figure 4A) for driving the mirror structure, the driving means including a conductive element (references 6 and 7) formed on the first surface of the movable plate, and magnetic field generating elements (references 100 and 120) fixed on the base.

Regarding claim 2, Bernstein teaches the supports include electrode pads (references 6B and 7B) electrically connected to the conductive element, the base includes wiring materials (Figures 6A and 6B) for electric connection to the outside, the wiring material have connection

portions electrically connected to the electrode pads (i.e. reference 61B), and the electrode pads are electrically connected to the connection portions by wire bonding.

Regarding claim 3, Bernstein teaches the base comprises a main substrate (Figures 9A – 9I reference 306) having the opening, and a rigid substrate (reference 302) fixed to the main substrate, and the wiring materials (references 320 and 340) are formed on the rigid substrate.

Regarding claim 4, Bernstein teaches the rigid substrate (reference 302) is within the main substrate (reference 306).

Regarding claim 6, Bernstein teaches the base further comprising a flexible substrate (reference 4) formed integrally with the rigid substrate.

Regarding claim 7, Bernstein teaches the base further comprising a flexible lead wire (Figures 6A and 6B) connected to the wiring materials of the rigid substrate.

Regarding claim 8, Bernstein teaches the conductive element comprises a coil (column 6 lines 33 – 37) disposed along a peripheral edge of the movable plate (Figure 1C reference 3).

Regarding claim 9, Bernstein teaches the magnetic field generating elements (Figure 4A references 100 and 120) are disposed on the same side of the base (reference 1) as a side on which the mirror structure (references 2 and 3) is mounted.

Regarding claim 10, Bernstein teaches the driving means further comprises a yoke of magnetic material (Figure 4B reference 122), which cooperates with the magnetic field generating elements (reference 100 and 121) to constitute a magnetic circuit (Figure 4C), and at least a part of the yoke is disposed in the vicinity of the first surface of the movable plate.

Regarding claim 11, Bernstein teaches the conductive element (Figure 4A elements on top of reference 3) is positioned so as to overlap the magnetic field generating elements

(references 100 and 120) as viewed from a direction parallel to the first and second surface of the mirror structure.

Regarding claim 12, Bernstein teaches the base further comprising bonding portions (Figure 1A reference 4) projecting from the main substrate (reference 1), and the mirror structure (references 2, 3, and 5) is fixed to the bonding portions by adhesion, so that the mirror structure is positioned remote from the main substrate.

Regarding claims 13 and 16, Bernstein teaches the opening of the base (Figure 9I reference 1) has a size that does not intercept a light beam incident upon the mirror surface (reference 355) of a neutral time at an incidence angle of 45° over a full effective width of the mirror surface, and the magnetic field generating elements (Figure 4A references 100 and 120) are located not to intercept a light beam incident upon the mirror surface (lower face of reference 3) of the neutral time at the incidence angle of 45° over the full effective width of the mirror surface.

Regarding claims 14 and 17, Bernstein teaches the magnetic field generating elements (Figure 4A references 100 and 120) are located interposing the conductive element (structure on top of reference 3B) formed on the first surface (reference 3B) of the movable plate (reference 3), and a mirror surface effective width w_m (width of reference 3), interval w_p (width of legs of reference 120) of the magnetic field generating elements, base opening width w_b (width of opening in reference 1), height h_p of the magnetic field generating elements (distance from lower surface of reference 3 to legs of reference 120) with respect to the mirror surface, and height h_b of an upper surface of the base opening (distance from lower surface of reference 3 to lower

surface of reference 1) with respect to the mirror surface satisfy conditions: $w_p > w_m + 2h_p$; and $w_b > w_m + 2h_b$ (as seen in Figure 4A).

Regarding claim 15, Bernstein teaches an optical deflector as described above for claims 1 and 8. Bernstein further teaches the driving means including permanent magnets (Figure 4A reference 100) fixed on the base.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bernstein in view of McClelland et al.

Bernstein teaches an optical deflector as described above and further teaches the main substrate has conductivity (column 5 lines 36 – 40). Bernstein does not teach the wiring materials including a ground wiring for grounding, and the ground wiring is electrically connected to the main substrate.

McClelland et al teaches an optical deflector where the wiring materials include a ground wiring for grounding, and the ground wiring is electrically connected to the main substrate (column 42 – 43). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the ground wiring of McClelland et al in the optical deflector of Bernstein in order to reduce static charge build-up.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Denise S Allen whose telephone number is (703) 305-7407. The examiner can normally be reached on Monday - Friday, 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on (703) 308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Denise S Allen
Examiner
Art Unit 2872

dsa
January 3, 2003

Audrey Chang
Primary Examiner
Technology Center 2800